

RainScapes Conservation Landscaping



A Residential Stormwater Management Tool



Special thanks to:

Ann English
Montgomery County Department of Environmental Protection
Low Impact Development Center, Inc.
Chesapeake Conservation Landscaping Council
for help, materials and information for our RainScapes Rebate program.

What is Conservation Landscaping?



Fishman/Jessup

“Landscaping with specific goals of reducing pollution and improving the local environment.”

USFWS Slattery, Reshetiloff, and Zwicker (2003)

This is a quote from the U.S. Fish and Wildlife Services book in your folder.

Another nice local resource is the **Chesapeake Conservation Landscaping Council**. They have a publication available on-line (listed in your resources) that is a great source of info. Says “draft”, but is nearing completion. Material used in this presentation comes from that publication.

The Chesapeake Conservation Landscaping Council is a coalition of individuals and organizations dedicated to researching, promoting, and educating the public about conservation-based gardening and landscaping practices in the Chesapeake Bay Watershed.

Per CCLC, Conservation Landscaping is:

1. Is designed to benefit the environment and to function well for human use
2. Contains locally native plants that are appropriate for site conditions
3. Has an ongoing management process to remove existing invasive plants, and to manage the property to prevent future alien plant invasions
4. Provides wildlife habitat
5. Promotes good air quality and is not a source of air pollution
6. Conserves water and promotes good water quality
7. Promotes healthy soils, composts plant waste on site, and amends disturbed soils to encourage native plant communities
8. Works with nature to be more sustainable with less input.

Why Conservation Landscaping?



A. English

- Reduces pollution of our air and water
- Conserves non-renewable resources such as fuel and water
- Helps maintain regional biodiversity
- Helps eradicate non-native invasive species

•A healthy ecosystem provides fresh air, clean water and productive soils.

Conventional lawn and garden care contributes to pollution of our air and water and uses up non-renewable resources such as fuel and water.

•According to the US Fish and Wildlife (publication in your folder):

- 30% of water consumed on the East Coast goes to watering lawns.
- Americans manage more than 30 million acres of lawn and tend to over-apply products, using 100 million tons of fertilizer and more than 80 million pounds of pesticides annually. Excess products make their way into our waterways.
- Per hour of operation, small gas-powered engines used for yard care emit more hydrocarbon than a typical auto (mowers 10 times as much, string trimmers 21 times, blowers 34 times).

How does conservation landscaping help?

- Acts as an on-site stormwater management facility cleansing storm water and slowing its progress to the stream. Some nutrients will even be taken up by the plants.
- Helps maintain regional biodiversity. Many native plants, insects, birds and animals are being displaced by development, increasing levels of pollution, introduction of invasive species and climate change.
- By helping to re-introduce native species to their local ecosystems and taking care not to plant potential invasive species, you will help preserve our unique regional biodiversity.

The Gardening-Stormwater Connection

By trapping some of the water coming off of your property you can help prevent damaging:

- Erosion
- Sedimentation
- Pollutant transport



Why does the City of Rockville encourage and rebate residents for the use of conservation landscaping techniques? On-site residential stormwater management. To help minimize impacts close to home, and as far away as the Chesapeake Bay.

As Rockville's population grows, so do our impervious surfaces.

Before any development occurred, much of the water from falling rain and melting snow soaked into the soil. Water that did not soak into the soil evaporated, was absorbed by plants or traveled slowly over land to streams, wetlands and ultimately the Chesapeake Bay.

- Today driveways, roofs, roads and other impervious surfaces alter the water cycle, causing rapid runoff. The fast flowing water picks up pollutants and flows untreated into gutters, inlets and storm drains.
- In addition to debris and other pollutants ending up in the storm drains, the fast flowing water causes stream banks to erode dumping sediment into our waterways.
- Additionally, fertilizers, soils and pesticides are carried from lawns and sports fields through the storm drain system.

A **watershed** is the land area from which all water and everything carried by that water, flows or drains into a common river, lake, ocean, or other body of water. A watershed can be very large; for example, the Potomac River watershed collects water from thousands of square miles; or very small, such as a 20-acre watershed that drains into a pond. The City of Rockville contributes to three watersheds: Cabin John Creek, Watts Branch and Rock Creek. These lead to the Potomac and ultimately the Chesapeake Bay. What we do in Rockville impacts the Bay

According to the Chesapeake Bay Program (partners with EPA)

Stormwater from urban and suburban areas contributes a significant amount of pollutants to the Bay. Every time we drive our cars, fertilize our lawns, leave pet waste on the ground or forget to fix car leaks, we contribute to pollution in our local rivers, streams and the Bay.

- 17% of phosphorus, 11% of nitrogen and 9% of sediment loads to the Bay come from stormwater.
- Chemical contaminants from runoff can rival or exceed the amount reaching local waterway from industries, federal facilities and wastewater treatment plants.

Rockville's RainScapes Rewards Guidelines and Criteria for Project Eligibility

- Planted area (turf or non-native invasive plants) to be converted must be at least 500 square feet*
- Three-inch mulch layer required
- No plastic sheeting
- A planting plan
- NO non-native invasive plants
- $\frac{3}{4}$ must be native

*need not be contiguous



THESE ARE the City's REQUIREMENTS.

YOU MUST CHECK WITH your HOA/Neighborhood Association as well

500 Square feet does NOT need to be contiguous

Mulch layer helps retain moisture (good for plants, good for the streams) and should help deter weeds, hence no need for plastic sheeting. Plastic sheeting can prevent water from soaking in.

Your planting plan gives us a way to help you succeed.

ALWAYS call MISS Utility 800-257-7777 before you dig!

Plant Language

- **Native:** Any plant that historically grew in this REGION.

- **Alien/Non-Native:** plants that occur outside their natural range boundaries (most often is mediated by humans either deliberately or unintentionally).



- **Invasive species** means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. *Executive Order 13112*

• Invasive species spread from manmade settings (gardens, agricultural areas, etc.) into the wild. Once in the wild, invasive species can reproduce virtually unchecked and displace native species, which can result in forest ecosystems that lack plant diversity (see FOLDER for list of invasive plant species and link to publication that gives alternatives).

• Native wildlife suffers when invasive species replace the native plants they prefer or need for food and shelter.

Why go native?

Native plants:



- are more adaptable to local climate and soils therefore requiring less maintenance
- are more resistant to insects and disease, so are less likely to need pesticides which run off lawns and contaminate local waterways
- attract and sustain more wildlife
- can help to prevent erosion and pollution by stabilizing the soil and slowing the flow of rainwater runoff

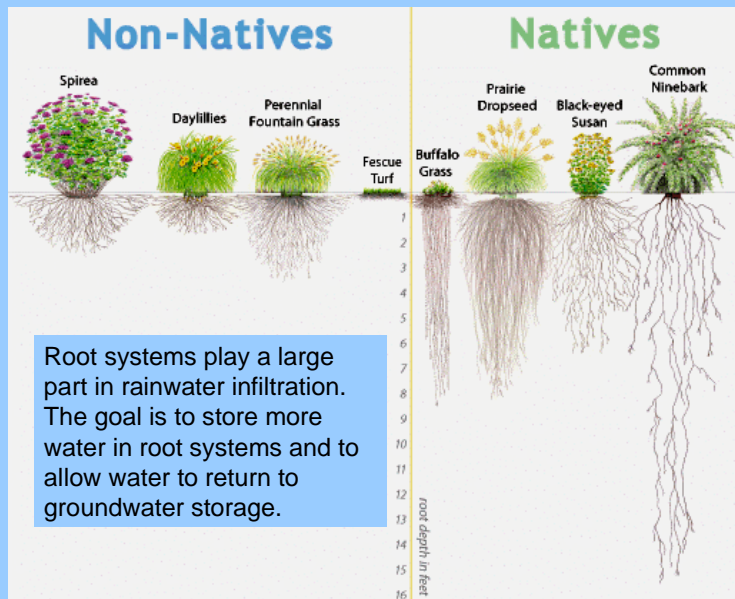


Our region has its own unique plant and wildlife communities that are not found in any other place on earth. Preserving the unique plants and animals of our region will help maintain the health of our local ecosystem and, in turn, support global biodiversity conservation efforts. Each species depends on the services provided by other species to ensure survival. This includes humans. It is a type of cooperation based on mutual survival that is often referred to as a balanced ecosystem. If one part of that balanced ecosystem is removed it throws the rest of the system “out of whack.”

Specifically, biodiversity is important because:

- Complex ecosystems with a wide variety of plants and animals tend to be more stable. A highly diverse ecosystem is a sign of a healthy system.
- Ecosystem services, such as the fresh air, clean water and productive soils that we need to survive are preserved through a bio-diverse plant community.
- New sources of medicines, food and other plant-derived compounds are continually found in a diverse plant and animal population.
- Diversity allows ecosystems to adapt to changing conditions. Diverse plant and animal communities are better able to survive pest infestations, diseases and changing microclimate conditions.

Getting to the Root of the Problem



(Courtesy of Mid-America Regional Council)

- Landscaping with deep root systems and adequate mulch will capture water and can hold it temporarily and remove pollutants washing off the surrounding land.

Obtaining Native Plants



Photo: Goodman/ Farrelly

- Local nurseries and some big box stores (Home Depot and Lowes) are carrying more natives.
- Where possible, select species native to this region not just U.S.

- Native plants should never be removed from the wild unless an area is about to be developed
- Remember... once established, native plants will reduce your labor and maintenance costs and invite wildlife to your yard



If you have a favorite plant that you can't obtain, be sure to ask your local nursery to consider adding it to their stock.

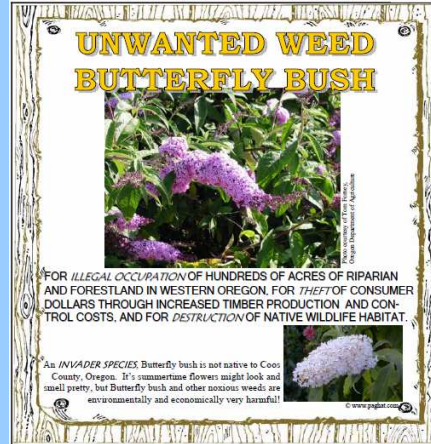
These sources are listed in your packet as sources of native plants:

- Chesapeake Natives, direct source of native plants.
(http://www.chesapeakenatives.com/Chesapeake_Natives_Draft/Welcome.html)
- Maryland Native Plant Society, list of nurseries carrying native plants
(<http://www.mdflora.org/publications/nurseries.html>)
- Montgomery County, list of nurseries carrying native plants (list may be still under development)
(<http://www.montgomerycountymd.gov/Content/DEP/Rainscapes/pdf/nurseries.pdf>)
- US Fish and Wildlife Service, list of nurseries carrying native plants.
(<http://www.fws.gov/chesapeakebay/BayScapes/bsresources/bs-findingnatives.htm>)
- MoCo's RainScapes Gazette often lists native plant sales. To subscribe electronically:
<https://ext01.montgomerycountymd.gov/entp/s1p/esubpublic/newssubscriber.do>
- Behnke's: a pdf of the BaySafe plants they offer is available at:
<http://behnkes.com/website/files/baysafeprogram.pdf>

Please contact us at 240-314-8870 if you know of other nurseries offering native plants.

Why all the negative talk about Non-Native Invasive Plants (NNIs)?

- NNIs pose a threat to the ecosystem because their aggressive behavior competes with native plants for water, pollinators, nutrients and sunlight.
- They are so successful because they lack natural predators that keep them in check in their native home.
- Very difficult to control. But CAN be controlled through educating the public on their identification and Best Management Practices for removal.



Strange paradox:

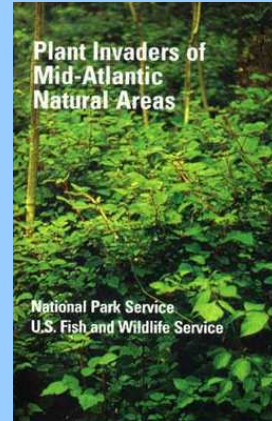
Google search for "butterfly bush" yields where to buy... add "invasive" to search to find out how to get rid of it!

Please see your blue folder for info brochure and photo card regarding invasive plants in Rockville.

Also, please see Resources Page for more Non-Native Invasive Plant information.

Invasives: The Sinister Seventeen

- Foliage Five - herbaceous plants
- Flowery Four - woody plants with several stems
- Odorous One - tree
- Sinewy Seven - vines that support themselves by climbing, twining, or creeping along a surface



Next few slides = Weed Warriors lingo and images. www.weedwarrior.org/

Plant Invaders publication available: <http://www.nps.gov/plants/alien/pubs/midatlantic/>

The Foliage Five



Japanese knotweed
Polygonum cuspidatum
Britt Slattery, USFWS



Japanese stilt grass
Microstegium vimineum
Ted Bodner



garlic mustard
Alliaria petiolata
Britt Slattery, USFWS



lesser celandine
Ranunculus ficaria
Jill Swearingen, NPS



Canada thistle
Cirsium arvense
Britt Slattery, USFWS

Japanese Knotweed Origin: Eastern Asia

Background Japanese knotweed was probably introduced into the United States in the late 1800's. It was first planted as an ornamental and has also been used for erosion control and landscape screening. Japanese knotweed is a noxious weed in the state of Washington.

Lesser Celandine Origin: Europe

Background Lesser celandine, also known as fig buttercup, was introduced to the United States as an ornamental plant and many colorful varieties are currently available commercially.

Japanese Stilt Grass Origin: Japan, Korea, China, Malaysia and India

Background Japanese stilt grass was first introduced into the United States in Tennessee around 1919 and likely escaped as a result of its use as a packing material for porcelain.

Canada Thistle, a perennial member of the aster family and a native of temperate regions of Eurasia, was introduced to the United States during the 1600s and is designated as a noxious weed in 43 states. It invades a variety of dry to moist habitats including barrens, fields, glades, pastures, stream banks, wet meadows and wet prairies. Canada thistle displaces native plants, changes the structure and species composition of natural plant communities and reduces biodiversity. Abundant seeds germinate within a year, but seeds remain viable for at least 20 years. It also spreads vegetatively, through lateral roots and root fragments.

Garlic Mustard Origin: Europe

Background Garlic mustard was first recorded in the United States around 1868, from Long Island, New York, and was likely introduced by settlers for food and medicinal purposes.

Alternatives: Native Herbaceous Plants



obedient plant
Physostegia virginiana



New York fern
Thelypteris noveboracensis



foam flower
Tiarella cordifolia



wild geranium
Geranium maculatum



creeping phlox
Phlox stolonifera

All photographs:
Britt Slattery, USFWS

Info about all native plants can be found in the publication in your folder:

**U.S. Fish & Wildlife Service Native Plants for Wildlife Habitat and Conservation
Landscaping
Chesapeake Bay Watershed**

Available: <http://www.nps.gov/plants/pubs/chesapeake/>

The Flowery Four:



autumn olive
Elaeagnus umbellata
USDA, NRCS



wineberry
Rubus phoenicolasius
Britt Slattery, USFWS
Jill Swearingen, NPS



bush honeysuckle
Lonicera spp.
James L. Reveal
John M. Randall, TNC
USDA, NRCS



multi-flora rose
Rosa multiflora
James H. Miller

Autumn Olive *Elaeagnus umbellata* **Origin:** East Asia

Background Autumn olive was introduced into the United States in 1830 and widely planted as an ornamental, for wildlife habitat, as windbreaks and to restore deforested and degraded lands.

Wineberry *Rubus phoenicolasius* **Origin:** Japan, Korea and China

Background Introduced into the United States in 1890 as breeding stock for new *Rubus* (raspberry genus) cultivars and still used today by berry breeders. It is prized for its delicious raspberry-like berries that are produced in great abundance in summer.

Exotic Bush Honeysuckles (*Lonicera sp.*), **Origin:** Eurasia, Japan, China, Korea, Manchuria, Turkey and southern Russia

Background: Exotic bush honeysuckles have been used for many years as ornamentals, for wildlife cover and for soil erosion control. Exotic bush honeysuckles out-compete and displace native plants and alter natural habitats by decreasing light availability and depleting soil moisture and nutrients for native species. Exotic bush honeysuckles compete with native plants for pollinators, resulting in reduced seed set for native species. Unlike native shrubs, the fruits of exotic bush honeysuckles are carbohydrate-rich and do not provide migrating birds with the high-fat content needed for long flights.

Multiflora Rose Origin: Japan, Korea and Eastern China

Background multiflora rose was introduced to the eastern United States in 1866 as rootstock for ornamental roses. Beginning in the 1930s, the U.S. Soil Conservation Service promoted it for use in erosion control and as "living fences" to confine livestock. State conservation departments recommended multiflora rose as cover for wildlife. More recently, multiflora rose has been planted in highway median strips to serve as crash barriers and to reduce automobile headlight glare. Its tenacious growth habit was eventually recognized as a problem on pastures and unplowed lands, where it disrupted cattle grazing, and, more recently, as a pest of natural ecosystems. It is designated a noxious weed in several states, including Iowa, Ohio, New Jersey, Pennsylvania and West Virginia.

Alternatives: Native Shrubs



winterberry
Ilex verticillata
Chris Miller, NRCS



spicebush
Lindera benzoin



gray dogwood
Cornus racemosa
Britt Slattery, USFWS



sweet pepperbush
Clethra alnifolia
USFWS



red or black chokeberry
Aronia arbutifolia or melanocarpa
Britt Slattery, USFWS



arrowwood
Viburnum dentatum
Britt Slattery, USFWS

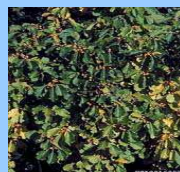
The Sinewy Seven:



English Ivy
Hedera helix
USDA, NRCS



Japanese Honeysuckle
Lonicera japonica
J.D. Ruffner, USDA



Oriental Bittersweet
Celastrus orbiculatus



Kudzu
Pueraria montana
David Moorhead



mile-a-minute vine
Polygonum perfoliatum
Britt Slattery, USFWS



winter creeper
Euonymus fortunei
James H. Miller



porcelain berry
Ampelopsis brevipedunculata
Jill Swearingen, NPS

English Ivy **Origin:** Europe, Western Asia and Northern Africa

Background European immigrants likely introduced English ivy to the United States. It is extremely popular and widely planted because of its evergreen foliage and dependability as a year-round ground cover. Although widely recognized as a serious pest of natural areas, it continues to be sold as an ornamental plant in the United States.

Japanese Honeysuckle is a perennial vine that was introduced from eastern Asia during the 1800's as an ornamental, for erosion control and for wildlife cover and food. Japanese honeysuckle is extremely widespread, occurring in at least 38 states from California across southern and midwestern states to New England and the Great Lakes region. It escaped cultivation to invade cultivated and natural areas where it grows vigorously, smothering most vegetation in its path, and girdles shrubs and young trees as it twines up to reach greater light. Its evergreen nature gives it an additional advantage, allowing it to grow when most other plants are dormant. Japanese honeysuckle is a vigorous bloomer and produces abundant seed dispersed by birds.

Oriental Bittersweet **Origin:** Eastern Asia, Korea, China and Japan

Background Oriental bittersweet was introduced into the United States in the 1860s as an ornamental plant and it is still widely sold for landscaping despite its invasive qualities. It is often associated with old home sites, from which it has escaped into surrounding natural areas.

Kudzu **Origin:** Asia

Background Kudzu was introduced into the United States from Japan in 1876 at the Philadelphia Centennial Exposition, where it was promoted as an ornamental and a forage crop plant. From 1935 to the mid-1950s, farmers in the South were encouraged to plant kudzu to reduce soil erosion, and the Civilian Conservation Corps planted it widely for many years. Kudzu nicknamed "the vine that ate the south," was eventually recognized as a pest weed by the U.S. Department of Agriculture and, in 1953, was removed from its list of permissible cover plants.

Mile-a-minute **Origin:** India, Eastern Asia and the islands from Japan to the Philippines

Background Mile-a-minute, also called Devil's tear-thumb, was experimentally introduced into Portland, Oregon in 1890, and later to Beltsville, Maryland in 1937 but did not become established at either site. An additional unintentional introduction in the 1930s to a nursery site in York County, Pennsylvania was successful and is the likely source of this invasive plant in the mid-Atlantic and northeastern United States. Seeds of the plant may have been spread with rhododendron stock.

Creeping Euonymus, or winter creeper, is an evergreen perennial vine in the bittersweet family (Celastraceae) that was introduced from China as an ornamental groundcover. It tolerates a variety of environmental conditions including full sun to deep shade, poor soils, and acidic to basic soils and is found in about 20 states in the eastern United States. Natural forest openings, caused by wind, insects or fire, are especially vulnerable to invasion by this plant. Creeping euonymus climbs trees and other vertical surfaces and grows vigorously across the ground, displacing native plants and appropriating soil, moisture, nutrients, sunlight and space that would otherwise be available to native species. It spreads vegetatively and by seed that is dispersed by wildlife and water.

Porcelainberry **Origin:** China, Korea, Japan and Russia

Alternatives: Native Vines



trumpet honeysuckle
Lonicera sempervirens
Britt Slattery, USFWS



virgin's bower
Clematis virginiana
Britt Slattery, USFWS



passionflower
Passiflora incarnata
R. Harrison Wiegand



trumpet creeper
Campsis radicans

The Odorous One:



Tree of Heaven
Ailanthus altissima
Paul Wray



*Other invasive trees: DO NOT PLANT

- Bradford Pears (*Pyrus calleryana* Bradford cultivar and others)
- Norway Maple (*Acer platanoides*)
- Princess Tree (*Paulownia tomentosa*)

Tree of Heaven *Ailanthus altissima* **Origin:** Central China

Background Introduced by a Pennsylvania gardener in 1748 and into California by immigrants during the gold rush years, Tree of Heaven, also called stinking sumac, was available commercially by 1840.

Distribution and Ecological Threat Widely distributed across the United States, Tree of Heaven occurs in 42 states, from Maine to Florida and west to California. It is an extremely common tree in urban areas where it can cause damage to sewers and structures but poses a greater environmental threat because of its invasiveness in cultivated fields and natural habitats. A prolific seeder, Tree of Heaven grows vigorously, establishing dense stands that displace native plants. It produces chemicals that kill or prevent other plants from growing in its vicinity.

Alternatives: Native Trees



redbud
Cercis canadensis
Britt Slattery, USFWS

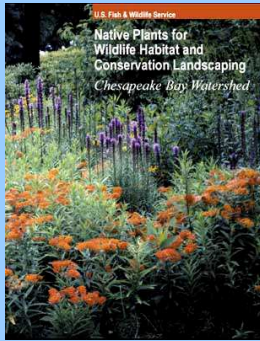


fringe tree
Chionanthus virginicus
R. Harrison Wiegand



serviceberry
Amelanchier canadensis
Chris Miller, NRCS

How to Use the Guide



- Plant Names and Types
- Groundcovers: PLEASE consider the plants listed as GC in notes
- Characteristics
 - Height
 - Flowers: bloom period and flower color
 - Fruit: fruiting period, color, and type
 - Fall Color
- Growth Conditions
- Habitat



Plant Names and Types: Plants are indexed at the back of the book by scientific as well as frequently used common names. They are grouped by botanical categories.

A Note About Groundcovers: Stay away from the English Ivy!

Height– Given in feet to the nearest .5 foot. LOOK UP on-line for spread.

Flowers: bloom period and flower color – The typical months in which the plant blooms are given.

Fruit: fruiting period, color, and type – This information is provided for plants with more conspicuous fruits or visually interesting seeds.

Fall Color – The color listed indicates the fall color of the leaves, or of the stems for certain plants such as grasses.

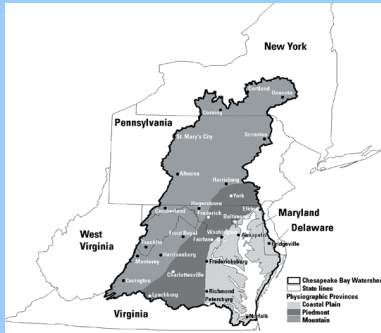
Growth Conditions: Light – The amount of sunlight a plant requires is defined as: Full Sun, the site is in direct sunlight for at least six hours a day during the growing season; Partial Shade, the site receives approximately three to six hours of direct sunlight; and Shade, the site receives less than three hours of direct sunlight or filtered light.

Habitat: To help with planning projects, sample lists of plants to use in certain habitat types, or certain site conditions are given in the back of this guide.

Plants (photos from the USFWS book): ***Trillium sessile*** Toadshade, ***Betula nigra*** river birch, ***Asclepias tuberosa*** butterflyweed

Conservation Garden Templates

Piedmont Region Chesapeake Bay Watershed



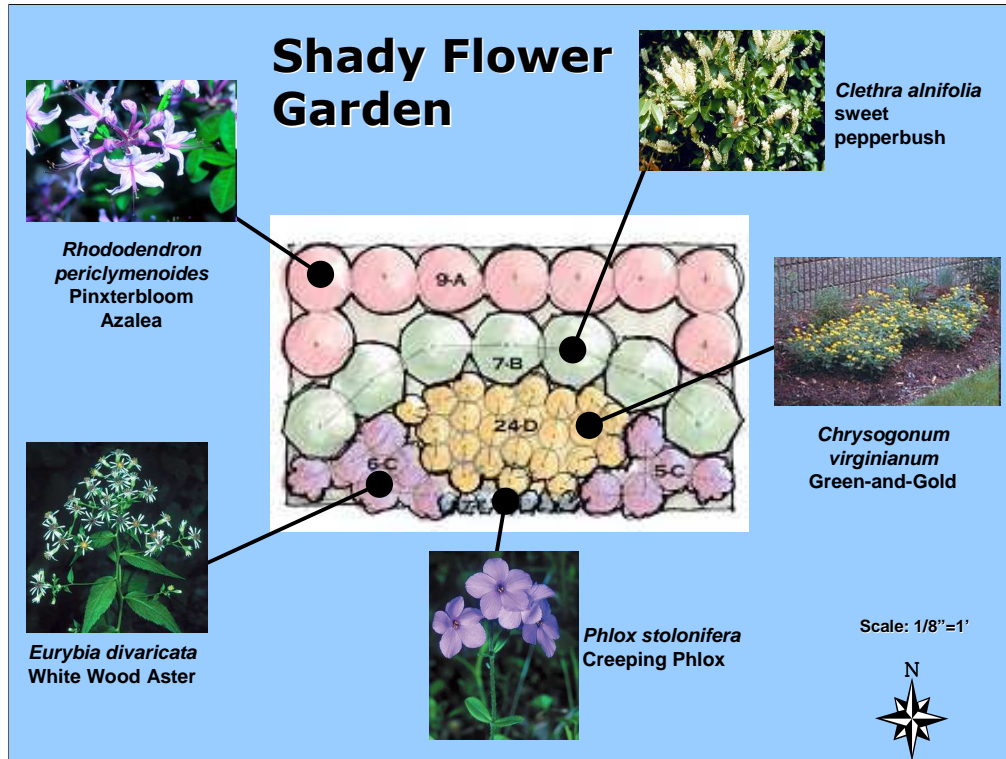
A. English

The plants in the following slides were chosen for suitability for growing conditions in the Chesapeake Bay Watershed (adopted from LID site designs web link in packet).

The templates are borrowed from http://www.lowimpactdevelopment.org/raingarden_design/.

Explore your yard. Need to think about

- Sun exposure,
- Orientation: from what angle(s) will you admire your garden(s)?
- Drainage,
- Spread of plants,
- Color,
- Fragrance,
- Location (proximity to play spaces... kids and bees not always a great mix),
- Predation (deer, rabbits, groundhogs)



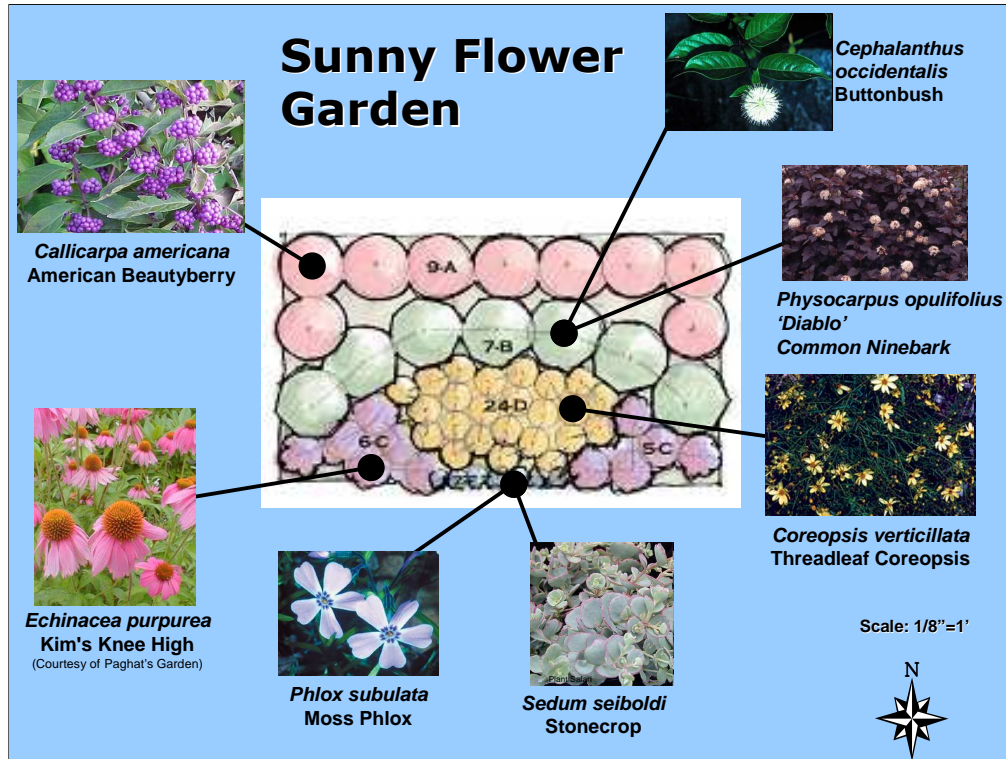
Let's start with a small garden design...

Try out your book: Use either common name or Latin name index to find *Rhododendron*
Page 49

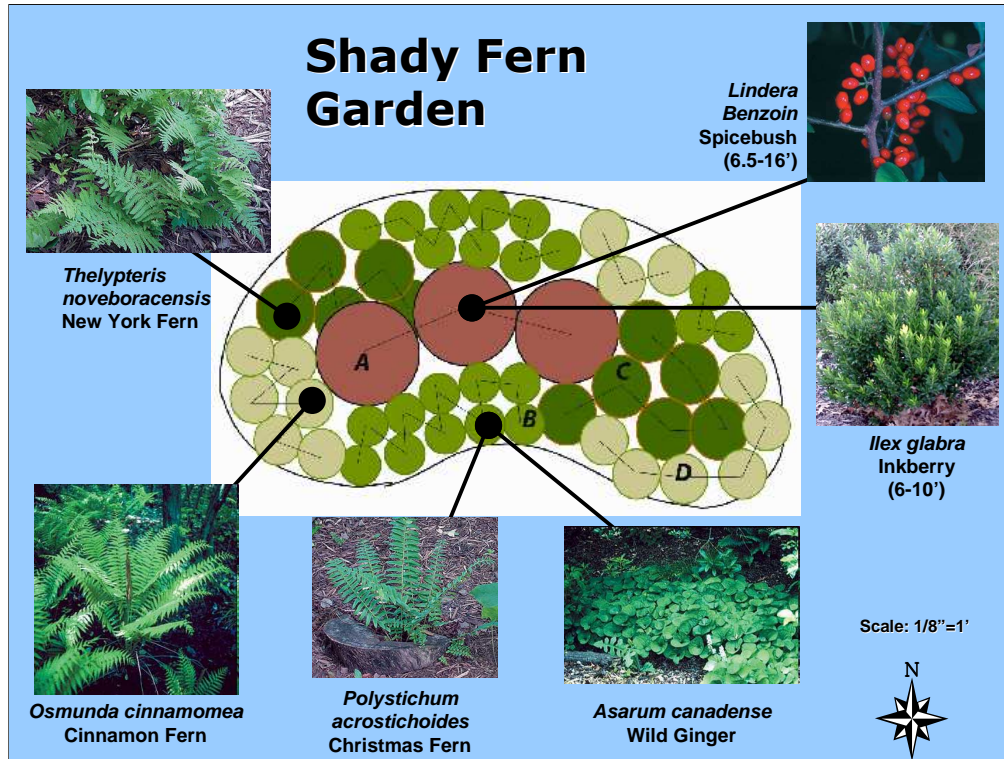
Once you select a plant, check out light/moisture/height to make sure it will work for your purpose. May want to do a Google search for spread... this book lists it for trees only.

See additional notes as well. This one says "susceptible to disease and insects". may want to use another type of Rho to avoid issues. All listed on the same page.

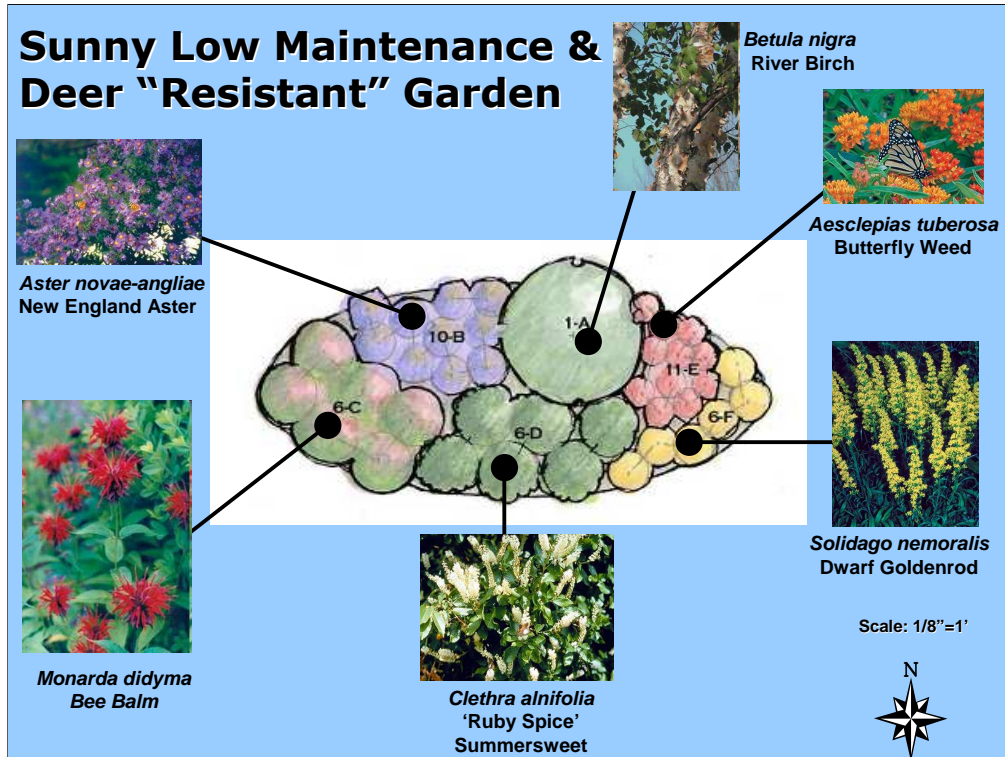
Once you have your design all laid out, your next step is to check with nurseries to see about availability.



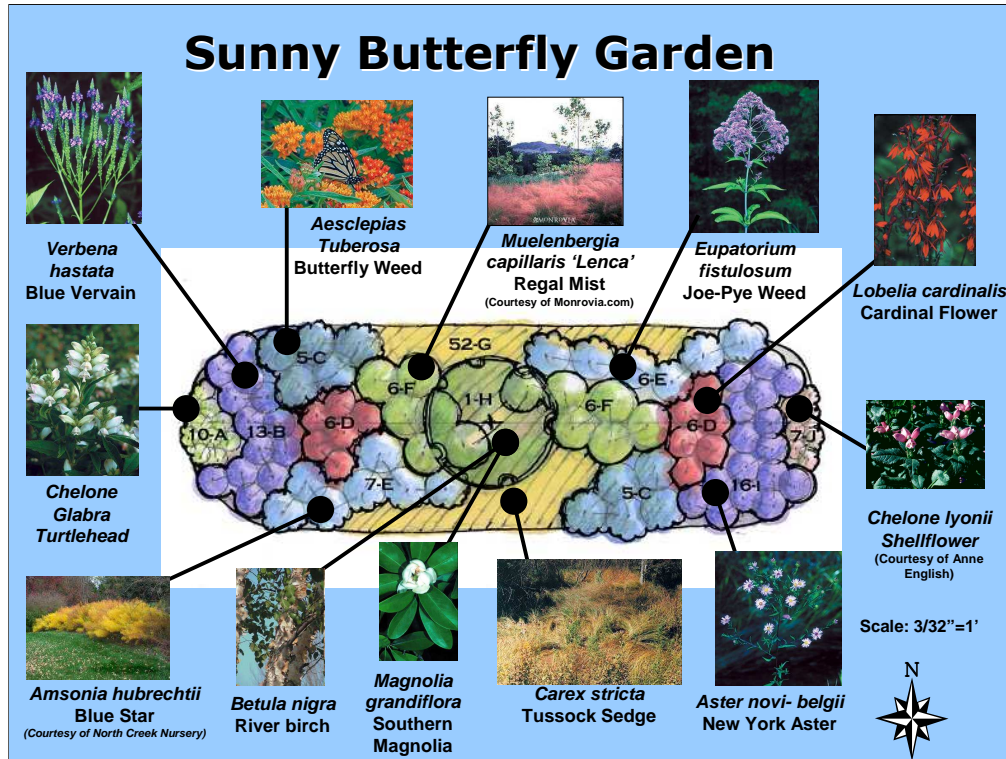
Notice that this slide contains a phlox (p31) that requires full sun. Same type of plant from last slide, different needs.



2 bushes are indicated for "A" on this slide. May want to have a second favorite in the case your first choice is not available.

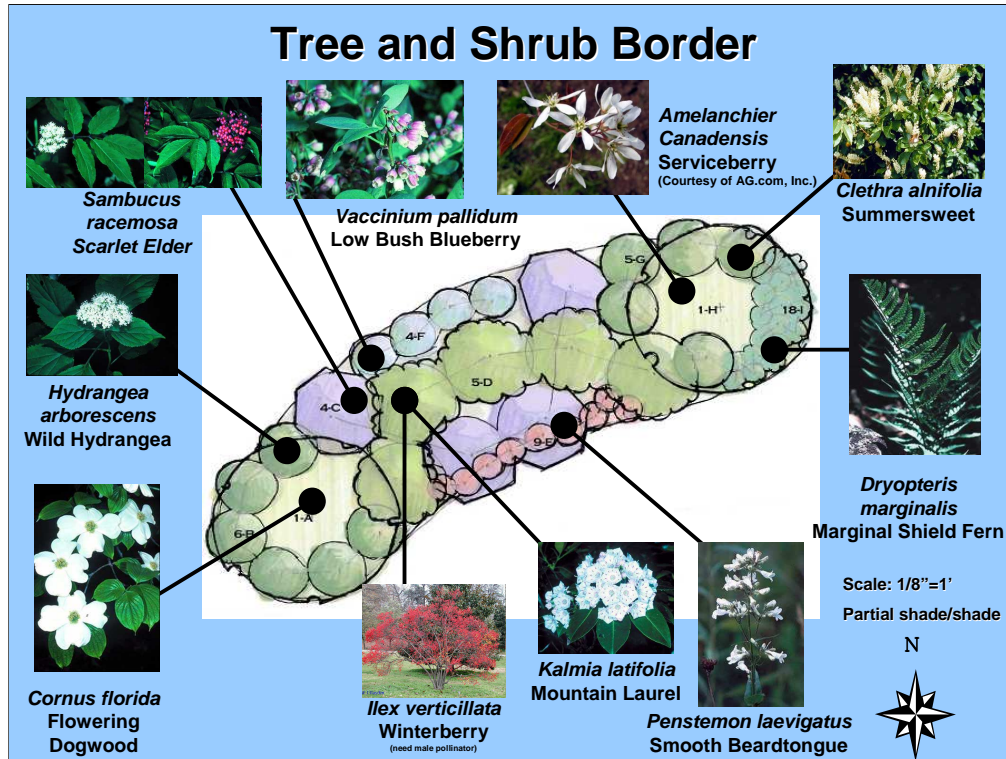


Deer will eat almost anything once they are hungry enough. They are overpopulated in Rockville, so they WILL get hungry enough.



See the resources page for a link to a publication called "Using Native Plants to Attract Butterflies" by the Maryland Native Plant Society

Or do a Google search on if you are trying to attract a particular butterfly



Things to remember about a native conservation landscaping:

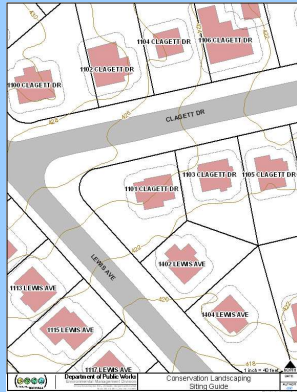
Will initially need watering and weeding until established (1-3 yrs depending on species/size at planting)

As it matures will need less and less from you

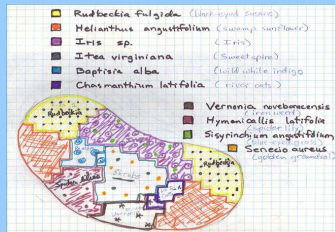
Every year you will need to make sure you have a 3 inch mulch layer

Replace plants as needed

Conservation Landscaping 1,2,3



1



2



3

Using your print-out and graph paper let's get started on your design.
Hand drawing and photo Courtesy of Montgomery County A.E.

Turf Removal & Disposal

The City of Rockville is asking you to remove turf... But how?



Digging sod up with a shovel is hard work. Down, under, push, twist and lift. Ughh!
Or rent a sod cutter.

Pile sod up out of the way with the grass side down, let it dry and then cover with mulch.
Occasionally weed. Will be great soil amendment following year.

Try a Google search: Lasagna Gardening

OR take it to MoCo transfer station

Designing a Conservation Landscape

- Perform a **site analysis**.
- Choose your **goals** and consider any specific **needs** related to those goals.
- **Environmental Features**

Look to **nature** for inspiration.

Create a **wild life habitat**...pond, pollinator dish or bird bath.

Improve water quality...reduce impervious surfaces, create a rain garden or design in a space for a rain barrel.



Perform a **site analysis**.

- Consider: historic uses of the land, soil types, geology, drainage, sun, water, natural plant communities, human and animal activities, as well as environmental features on adjacent properties.

Pay attention to **phases**.

- Don't design the landscape before you know where the utility lines are, for example.

- Your landscape design may be simple or involved or somewhere in between. If your project is complex, it will be especially important to pay attention to the separate phases of the project and their sequencing.

- Think of landscape design as an ongoing process. Update your design and your maintenance plan as the conditions of the landscape and the needs of the people using the landscape change. In many cases, landscape designs will need to be edited annually.

- Choose your **goals** for the landscape. Consider any specific **needs** that would be related to those goals.

Then plan a landscape that considers the following **Environmental Features**:

- Attempt to include locally **native plants**, plan for ongoing management process to remove existing **invasive plants**, provide habitat and food source for **wildlife**, promote good **air quality** by limiting need for gas consuming equipment, plan to **conserve water** and promotes good **water quality** while promoting **healthy soils** by using deep rooted native plants.

- Mirror patterns found in **nature**. For example, naturalistic layering of trees, shrubs and herbaceous plants provides structure that is important to wildlife as well as attractive to people. Look to USFWS for right plant – right place ideas

- Keep **lawn** to the minimum area needed for function. Conventional lawns are composed of alien invasive plants such as tall fescue, that have high maintenance requirements in terms of water input, fertilization and herbicide use. However, because they provide a smooth surface for certain recreational activities, and because the look of at least a little lawn is so strongly expected from some members of the community, even conservation landscapes often need to contain some lawn to be functional. Also, consider the extent to which any conventional lawn that must be present can be minimized in maintenance input without compromising function.

Perform a Site Analysis

- Create a scale drawing/base plan of the permanent features on your properties using the map provided. Include: walkways, buildings, lights, water sources and existing beneficial plants that you want to keep.

REMEMBER, you must factor in utility right-of-ways (sewer, water, etc.– call MISS Utility 800-257-7777 before you dig!)

A good site analysis also includes noting the following:

- existing vegetation
- views
- noise issues
- privacy
- sun/shade and microclimates
- drainage
- soil conditions*



*Conduct a soil test and/or look up soil conditions

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

- Plan to replace turf or invasive plantings by adding new landscaping beds and/or enlarge existing ones with native plants.
- Carefully decide where new development will occur to avoid destruction of existing habitats as much as possible. Take advantage of the site's existing natural features.
- Instead of isolated plantings, such as a tree in the middle of lawn, group trees, shrubs and perennials to create layers of vegetation.
- Plants sharing similar requirements are likely to be found together in plant communities that make up different habitat types - particular groupings of plant communities commonly recognized as wetlands, meadows, forests, etc. Naturalistic landscaping uses patterns found in nature, and allows some nature-driven changes to occur.
- To provide food and cover for wildlife year-round, include a variety of plants that produce seeds, nuts, berries or other fruits, or nectar.
- Make a plan for your whole yard, but pick a small area for your first effort. Use this area as a place for trial and error and then apply your findings to the rest of your yard.
- Consider replacing dead or dying non-native plants with native plants.
- A lab can analyze a small soil sample you send them. The results will include soil type (sand, clay, loam, etc.), pH (how acidic or basic), and fertility status and recommendation for amending the soil to make it into "average garden soil." SOIL SAMPLE INFO in folder. Don't just assume you need massive amounts of fertilizer.

Conservation Landscape Planning: Goals

Your goals may contain multiple environmental benefits as well as benefits that are not specifically related to the environment, but can be accomplished in an environmentally sound way. Some common examples of landscape goals would be:

- To screen an unsightly view;
- To create pollinator habitat;
- To strive for low maintenance;
- To provide a safe environment for toddlers



Make sure your goals take into account your needs:

To **screen the unsightly view**, will you need a fence with an evergreen vine, or a row of evergreen shrubs or trees?

To **create pollinator habitat** will you need plants, a water source, and shelter?

To have a **low maintenance landscape** will you need large islands of shrub and tree plantings and a good source of mulch? How will you keep mowing, and especially mowing around obstacles, to a minimum?

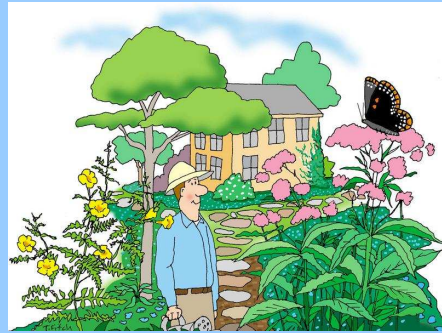
To have a **safe environment for toddlers** do you need a landscape that is free of potential poisons like fertilizers, herbicides, fungicides and insecticides? Do you need to be able to recognize harmful poison ivy plants and be equipped to eliminate them from the landscape?

Inspiration: Take a Nature Hike

Go outside and explore your favorite natural spaces.
If possible, try to observe your favorite sites in various seasons.

Take notes about:

- The composition of the space
- The natural plant communities
- Soil conditions
- Sunlight conditions
- Plant textures
- Temperature niches
- Wind direction
- Color mixtures
- Habitat uses
- What draws you to the site?



Notes from Ann English (in her role as Prof. GWU)

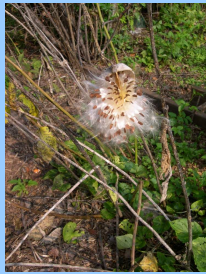
Questions
Design time
Raffle
Evaluations



Courtesy Goodman/Farrelly

By the way... working on Community Habitat Certification thru National Wildlife Federation.
This photo is from a garden of the program's founders. See brochure in your folder.

Volunteer Opportunities



- Adopt-a-Stream
- Save Our Streams Citizen Monitoring Effort
- Storm drain marking
- Invasive plant pulls (Weed Warriors)
- Environment Commission

Before and After



Invasive plants and weedy lawn dominate.



The new bed includes columbine, moss phlox, black-eyed Susan, butterfly milkweed, and little bluestem grass.

<http://www.mattshabitats.com>

Next 3 slides made possible by Matt Cohen of Matt's Habitats

Before and After (1st year)



Notice the plants are a bit scraggly looking. They will need more from you in the first few years.

Spring and Summer



*2 years after install



Notice the mix of natives and non-natives